

Reg. No .....

Name .....

18P407

**M Sc DEGREE END SEMESTER EXAMINATION - MARCH 2018**  
**SEMESTER 4 : BOTANY**  
**COURSE : 16P4BOTT13 ; BIOTECHNOLOGY AND GENETIC ENGINEERING**  
*(For Regular - 2016 admission)*

Time : Three Hours

Max. Marks: 75

**Section A**  
**Answer any 8 (2 marks each)**

1. What are the basic steps in gene cloning?
2. What are the uses of expression vectors?
3. What are competent cells? How can you induce competence?
4. What is the significance of carotene desaturase enzyme?
5. Differentiate between phospho-diester and phosphite-triester method of DNA synthesis.
6. What are the limitations of natural inducible expression systems?
7. Expand GEAC. What are the functions of GEAC?
8. What do you mean by cassette mutagenesis?
9. What are optical biosensors?
10. What is plaque hybridization?
11. Why cDNA library is considered as snapshot of gene expression?
12. What is a super bug?

**(2 x 8 = 16)**

**Section B**  
**Answer any 7 (5 marks each)**

13. What are the applications of ligase enzyme in genetic engineering? Explain the mechanism of ligase action.
14. Explain Blue-White selection technique.
15. Differentiate between binary vector system and cointegrate vector system.
16. What is phosphoramidite nucleotide? Explain its structure with a diagram.
17. Briefly explain site-specific recombination with a suitable example. Give an account on its applications.
18. Explain the effects and consequences of bioterrorism.
19. Give an account on oligonucleotide directed mutagenesis with plasmid DNA.
20. Explain the applications of biosensors in pollution monitoring.
21. What is *in-situ* hybridization? What are the different types of *in-situ* hybridization?
22. Give an account on vectors used in gene therapy.

**(5 x 7 = 35)**

**Section C**  
**Answer any 2 (12 marks each)**

23. Explain the properties and functions of restriction enzymes and ligases in rDNA technology.

24. Explain the various techniques and procedures in advanced transgenic technology.
25. Write an essay on the procedure and application of DNA profiling and footprinting.
26. What is rDNA technology? Enumerate the applications of transgenic animals.

**(12 x 2 = 24)**